ACIAR TREES FOR FOOD SECURITY PROJECT

SEED AND SEEDLING STAKEHOLDER WORKSHOP IN ETHIOPIA

(DRAFT REPORT)

Jonathan Muriuki, Ruth Kinuthia, Evelyne Kiptot, Abayneh Derero, Kiros Hadgu, Catherine Muthuri

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### List of Acronyms

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<tr>
<td>ACIAR</td>
<td>Australian Centre for International Agricultural Research</td>
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<td>AFSP</td>
<td>Agroforestry Food Security Programme</td>
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<td>FRIM</td>
<td>Forestry Research Institute of Malawi</td>
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<td>ICRAF</td>
<td>World Agroforestry Centre</td>
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<td>LRC</td>
<td>Land Resources Centre</td>
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<td>NGO</td>
<td>Non-Governmental Organizations</td>
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<td>RRC</td>
<td>Rural Resource Center</td>
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<tr>
<td>SWOT</td>
<td>Strengths, Weaknesses, Opportunities and Threats</td>
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<tr>
<td>TFS</td>
<td>Trees for Food Security</td>
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Introduction

The ‘Trees for Food Security’\(^1\) (TFS) project funded by the Australian Centre for International Agricultural Research (ACIAR) aims at enhancing food security for resource-poor rural people in Eastern Africa through research that underpins national programmes to scale up the use of trees within farming systems. Pilot implementation is in Ethiopia and Rwanda followed by scaling out of successes to relevant agro-ecological zones in Uganda and Burundi. Large-scale adoption of farm trees requires addressing barriers to adoption and will therefore depend on understanding the policy, socio-economic and institutional factors required for farmers to integrate trees on their farms. While factors affecting these decisions are identified, it is also important to understand the predominant factors in specific contexts and how best they can be addressed. The existence of functioning and sustainable tree seed and seedling systems that supply the right tree species for the right agro-ecological context is a requisite for large-scale adoption of technologies involving integration of trees in farms.

The project has the establishment of, and improving access to, sources of high-quality tree planting materials\(^2\) as part of its objectives. This includes analysis of national seed and seedling subsectors analyzed at the characterization stage and establishment of rural resource centers and other feasible systems of seed and seedling distribution suited to national context. The characterization phase includes farm surveys, tree nursery surveys, key informant interviews with national stakeholders in the sector (all these constituting background studies) and seeds and seedlings stakeholder workshops to dialogue on the most appropriate seed and seedling systems to enable the communities in each country to access quality tree germplasm. This document reports on the proceedings of the seed and seedling stakeholder workshop held in Ethiopia. The objectives of the workshop were to:

1. Present scenarios on tree seed and seedling from on-going studies within the Trees for Food Security Project and case studies on developing agroforestry seed and seedling systems in Cameroon and Malawi
2. Conduct a SWOT analysis of the country seed and seedling system based on country and comparative study presentations
3. Outline possible interventions and research studies for the remaining TFSP period at both sites and national level

The workshop participants evaluated the results of the baseline studies on seed and seedling systems in the project sites (baseline farmer questionnaire on sources of germplasm of planted trees, key informant interviews on the existing germplasm supply systems and nursery operator surveys).

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\(^1\) Trees for food security is the short form for ‘Improving Sustainable Productivity in Farming Systems and Enhanced Livelihoods through Adoption of Evergreen Agriculture in Eastern Africa’ project

\(^2\) Tree planting materials include seeds, seedlings and vegetative propagules although only the first two categories may be frequently mentioned in this report
Drawing from these preliminary results and case studies from two other countries the workshop diagnosed the national seed and seedling supply systems with the main objective of coming up with options to develop the systems for contextual relevance and sustainability.

The results also provided recommendations on how to engage different stakeholders, including government officials, policy makers, private sector, rural institutions and other actors to enhance provision of high quality tree seeds and seedlings to smallholder farmers. This report documents the proceedings of the workshop and begins by laying a background on the need for quality tree germplasm then goes on to report on the status of seed and seedling supply system in the country ultimately ending by presenting notes by discussion groups on possible interventions to improve the sector.

**Overview of seeds and seedlings system and link to extension**

*Jonathan Muriuki – ICRAF Nairobi*

In his presentation, Jonathan Muriuki begun by comparing advantages of trees on farm vis-à-vis trees in forests. Trees on farms were indicated to be more feasible and attractive to the farmers due to low cost, low labour input and high potential returns. They provide inputs where markets are imperfect or costs are high for products such as fruits, fences, fodder, soil nutrients and construction materials. Furthermore, trees add stability to system productivity and income; and they are durable non-depreciating assets whose value increases with age. Additionally they are safer from diseases and theft and can be produced under varied climatic conditions.

In addition to the benefits mentioned above, farmers prefer fast growing trees with high product prices. Other qualities sought for include: high quality timber, availability of fruits in all seasons, provision of fuel wood, less competition with crops and resilience. Poor genetic and physiological quality of seeds however limits the potential of growth and performance of trees, thereby making the trees undesirable to farmers. Genetic quality depends on site/species matching and genetic potential of the planted trees to perform on the desirable attribute. Poor genetic quality is evidenced through slow growth rate of trees and vulnerability to attack by pests and diseases. Retarded growth and low survival rates of tree seedlings can be attributed to poor physiological quality. Jonathan further described various ways in which tree seeds and seedlings can be established on farms (Figure 1). Among the nursery practices that enhance seedling physical quality include substrate quality (fertility, porosity), use of containers, proper watering and shading, maintenance of nursery hygiene and seedling sorting.
Tree seed distribution system is either centralized – through either the government or NGOs or decentralized. Many farmers however prefer to source for seedlings rather than seeds for their farms because they plant only a few trees per season. Farmers source their seedlings from tree nurseries that can be central government and project nurseries, on-farm nurseries (group and individual) or as wildlings from farms and forests. A well-functioning seeds and seedlings system requires meeting the requirements of farmers. Therefore, efficient information flows between seed distributors and the farmers should be established. Involvement of all stakeholders is also critical in tree seeds and seedlings system. Varied needs of different actors should be considered within the systems to enhance synergy and ensure a well-functioning system as illustrated in Figure 2. Farmers require technical skills on the management aspects of trees on their farms. The government, NGOs and nursery operators can provide these skills through trainings and demonstration activities.
In his concluding remarks, Jonathan emphasized on the need for efficient seed and seedling supply system. He gave various highlights on how this can be achieved viz., considering tree farming as part of a commercial commodity chain in a market where the operations of small competitive seed and seedling dealers are facilitated; support of development products through research; discontinuation of free tree seeds and seedlings distribution systems; development of markets at the local and regional level; provision of ‘good norms’ and finally supplying inputs to support the public breeding and conservation programmes.

**Studies on tree seeds and seedlings systems in the TFS project**

*Jonathan Muriuki - ICRAF Nairobi and Kassim Dedefo – Wedo Gennet College of Forestry and Natural Resources; Hawassa University*

Three separate studies on seed and seedling systems under the Trees for food security project have been conducted in Ethiopia:
1) Household baseline survey. Questions on tree seed and seedling systems formed part of the household baseline survey. The main objective was to determine trees planted on farms in the three years preceding the survey, trees maintained on farms for more than three years, protection of naturally protected trees and sources of tree germplasm.

The survey interviewed 687 households of which more than half (54%) reported to have planted at least one tree species in the three years preceding the survey. In total 87 different tree species were recorded in the two zones with most of the planted seedlings (39%) having been obtained from the Ministry of Agriculture. The rest of the seedlings had been sourced from farmers’ own farms (37%), market purchase (8%) and forest areas (3%). In Bako most seedlings are obtained from the Ministry of Agriculture while most farmers in Melkassa obtain seedlings from their own farms. *Eucalyptus spp* constituted most of the trees planted (24% responses) and was mainly sourced from the farms (42% responses). Several species were naturally regenerated and protected by farmers (Figure 3) with *Faidherbia albida* (mentioned in East Shewa) topping this list followed by *Cordia africana* (mentioned in West Shewa/East Wollega).

**Figure 3: Naturally regenerated and farmer protected tree species in two zones3 in Ethiopia**

![Frequency Chart](chart.png)

2) Key informants’ survey. This survey aimed at mapping out the tree seeds and seedlings supply system in the country in order to establish the role of the government and Non-Governmental Organizations (NGOs) in the systems, assessing the quality of the germplasm as mapped out in seed sourcing, collection/procurement and distribution and ultimately seedling production; identifying organizations and individuals dealing with tree seed and seedlings, their roles, supply channels, support given to tree seed dealers and nursery operators. The key informants interviewed comprised of: Natural Resource Management
(NRM) experts at the woredas, NGO representatives from three organizations, representatives from two churches with NRM initiatives, research officers at Melkassa research Center and Forest Research Center and one private seed dealer.

Findings from the key informant interviews showed that tree seed and seedling system is largely managed by the woreda agricultural office. Government nurseries are located at the woreda centres while a few kebeles that are located far from the woreda centers also have nurseries. Most of the nurseries at the kebeles are temporary however. Technicians hired by the agricultural office at the woreda level operate the nurseries. Due to high demand for tree seedlings, the communities are encouraged to establish private nurseries. NGO representatives interviewed highlighted that they had established their own nurseries from which seedlings are raised and distributed to the communities. They also supported the woreda nurseries through provision of tree seeds and facilitating trainings for the DAs and nursery technicians on nursery management activities. Some challenges faced by the various actors in the sector: farmers, government and NGOs are presented below as well as some early recommendations that could be drawn from this survey.

3) Nursery survey. This study was conducted by Kassim Dedefo as part of his MSc research. The objective of the study was to understand current nursery practices and tree seed procurement approaches, and their effect on tree seedling quality in eight woredas in East Shoa, West Shoa and East Wollega zones.

Preliminary results from the nursery survey indicate that the most of the nurseries in the three zones are government operated (55%) compared to project (27.5%), group (12.5%) and individual (5%) owned nurseries. Most seeds are sourced from seed dealers (87.6%) and locally from tree stands (11.1%) with very little seed being procured from formal suppliers. The seeds procured from informal seed dealers had very low germination rates indicating low quality. Overall the result of this study suggests that those stakeholders and concerned bodies should be focused at creating real linkages between nursery operators and seed dealers as well as among themselves, and closer interactions with research and development agents have potential to improve the quality of the seeds and seedling supplied.

**Challenges faced by the government and other organizations in seeds and seedlings supply**

- Few seed dealers and high cost of seed from the currently operating dealers
- Poor seed quality leading to low germination rates in nurseries
- High transportation costs for tree seedlings from the woreda nurseries
- Tree planting coincides with planting season and farmers do not give trees priority leading to establishment failures
• Low survival rates of seedlings supplied to farmers (In West Shewa bare-root production prevails due to lack of planting materials).
• Difficulty to increase the diversity of planted species. Farmers mainly prefer Eucalyptus, Grevillea and fruit trees and are hesitant to plant other species
• Unavailability of seed mother trees within community localities compromises seed quality

Challenges faced by farmers and seed dealers

• High transport costs by seed dealers to source seeds from far-placed mother trees causes seed prices to increase
• Poor assessment of seedling demand by nurseries leads to low sale figures and thus huge losses
• Lack of seed storage facilities to maintain seed physiological quality
• Lack of appropriate nursery inputs such as seeds, polythene tubes, watering cans and pumps
• Shortage of water in nurseries
• Knowledge gaps in the community – farmers do not know which species to plant and how to manage them
• Free grazing contributes to destruction of planted seedlings

To counter these challenges, some early recommendations include:

• Development of a national strategy for germplasm supply – dialogue by various actors government, NGOs and the private sector
• Improvement in the efficiency of seed supply and seedling establishment activities – from government to private supply,
• Investment in seed quality control by the government
• Increasing access to sufficient technical skills to produce and distribute quality tree germplasm
• Enhancing tree species diversity in the landscape especially in the semi-arid site
• Increasing government and NGO support to follow-up by technical staff and enhance proper seedling establishment after out-planting – not duplicating efforts
• Managing free grazing

Enhancing Farmers Access to Quality Planting Materials: The case of the Rural Resource Centre in Cameroon

Bertin Takoutsing

Adoption of agricultural and agroforestry technologies has remained significantly low despite progressive research efforts. The low adoption has been attributed to use of traditional extension approaches, mainly relying on government-run extension. Lack of appropriate tree planting materials
among local implementers has also been a major impediment towards adoption of agroforestry innovations.

Involvement of farmers in the research and development process is a suitable method of ensuring sustainable adoption of these technologies. In addition to providing knowledge, farmers contribute to the insights of the local practices. This knowledge could informatively be tapped into by supporting the farmers through training and capacity building.

Major efforts in enhancing farmers’ participation in research and development and complementing the classical existing extension methods in Cameroon include conception of the Rural Resource Centres (RRCs) through the Participatory tree domestication programme. RRCs are community owned initiatives which act as entry points for participating farmers to have access to various training, technical packages, knowledge/skills, inputs/information on technologies and other development issues such as marketing. The concept of RRCs lays emphasis on access to knowledge, interactive learning and networking among farmers and between farmers and other stakeholders.

**Key steps in establishing a Rural Resource centre**

1) Sensitization and Awareness Creation – Sensitization meetings are organized across the project areas in which farmer groups with the ability and interest to host a Rural Resource Centre are identified. Farmers’ needs such as knowledge, capacity-building and skills are diagnosed. Further their potential in terms of experience, resources, organization and interaction with other farmers in the community is established.

2) Development of Training Modules, Technical Packages and Planning Meetings – Training modules are developed in a participatory manner taking into consideration the knowledge gaps at the level of identified partners (farmers, RRCs staff, extension workers, NGOs and government services). Planning meetings focusing on sharing responsibilities and tasks and discerning the types of demonstrations to be established are organized.

3) Capacity Building – This entails technical training, design and implementation of demonstration protocols, for example tree nurseries demonstration, manure preparation, green house etc.

![Compost preparation](image1) ![Finished compost used in the nursery as potting media](image2)
4) Support to Rural Resource Centres– RRCs are progressively developed into training and demonstration centres by putting in place training offices, accommodation facilities and on-farm demonstration plots.

5) Establishment and management of On-farm Demonstrations – Demonstrations that address key problems of the target community and those which generate results within a short duration are prioritized and implemented.

6) Partnership with other stakeholders - Structural links are established through institutional arrangements between the RRC and other organizations such as research institutions, universities and government organizations.

7) Results dissemination – Findings and results from the demonstration plots are disseminated through field visits to demonstration sites, field days, agricultural shows, trainings, village development and social meetings.

8) Monitoring and Evaluation– Appropriate monitoring strategies are established through identification of important parameters and development of monitoring tools. Farmers send minutes of the meetings and field visits to the researchers who analyze them at the programme level. As part of monitoring activities, monthly meetings in the RRCs are held through representatives to discuss the progress of field activities, the results, the difficulties and the way forward.

Key services rendered by RRC
Major services offered by RRCs’ include:

- Training centre for participatory tree domestication
- Farmer contact point for financial related services
- Provisioning of inputs such as polybags, seeds, pesticides, fertilizers, cutlasses etc.
- Grading and packaging of farm and processed products
- Processing centre for farm produce
- Transaction centre for farmers with traders and market products
- Training centers for farmers enterprise development and management
- Trial and demonstration center for on farm management options
- Main introduction and multiplication center for superior germplasm
It was noted that RRCs can generate revenues of up to 5 – 10 million FCFA (7500 – 15,000 €) per year. However, the set-up of a RRC requires major investments upfront, which needs an external source of capital that cannot be recovered in less than 10 years. RRCs are mainly financed by sale of products (seedlings, medicinal plants, honey, processing of food stuff, etc.), service provision fee, gifts and subventions. Improved production capacity, skills, visibility and credibility can help increase the income.

In his concluding remarks, Bertin underscored the vital role of the RRCs in diffusing agroforestry innovations to farmer groups. So far this has been achieved through delivery of better quality of services, better linkages and networks with other stakeholders and involvement of more women and youths. However there is still need for private sector involvement and more research on financial viability and sustainability of this approach.

Seeds and seedlings supply system in Malawi

Simon Mng’omba – ICRAF Malawi (presented by Evelyn Kiptot – ICRAF Nairobi)

Simon Mng’omba reported that seeds and seedlings supply system had been a major component of the Agroforestry Food Security Programme (AFSP), a four-year project implemented in three districts of Malawi. He further noted that seed sources in the country are mainly centralized. The Forestry Research Institute of Malawi (FRIM) and the Land Resources Centre (LRC) are the major seed suppliers and approximately 73 tons of seeds were distributed between 2007 and 2010. FRIM sources seeds from its orchards while farmers mainly collect and supply the seeds distributed by LRC. ICRAF also distributes seeds but in low quantities, these seeds are sourced from orchards and individual farmers. Major challenges associated with the centralized seed supply system include:

- Limited seed supply
- Most tree species have not been certified (only Gliricidia spp, Eucalyptus spp, Pinus spp from FRIM have been certified)
- High seed demand which has compromised seed quality requirements
- Inadequate seed documentation – Information on seed viability, germination and pretreatment is limited.

In order to counter the challenges mentioned above and also drawing from lessons learnt from AFSP–I, a proposal on implementation of decentralized seed supply system as opposed to centralized system was made. The decentralized system was preferred due to: low costs, local engagement, local sustainability, ease of engagement and reduced transport costs. Decentralization would also enhance building farmers’ capacity on seed supply thus meeting rural demand of the agroforestry tree seeds. In a bid to further promote adoption of agroforestry, Community Agroforestry Tree Seedlings (CATS) bank was introduced in 2009 in Malawi and Mozambique. The
bank idea had the objective as providing a supply avenue for agroforestry seeds as well as improving structures, capacities and institutions for agroforestry seed supply and distribution.

Community Agroforestry Tree Seedlings (CATS) banks were found to be effective in increasing farmers’ incomes through increased sales. Since most of the seeds supplied were for fertilizer tree species, three quarters (75%) of participating farmers had more months of food security than non-participating farmers due to improved soil fertility, which increased crop yields. Moreover, firewood availability among CATS Bank participating farmers was increased due to improved agroforestry seed supply, distribution and agroforestry adoption. The banks faced several challenges that were mainly due to poorly structured market systems. This called for evaluation of marketing systems for the national agroforestry seed sector to ensure that supply did not exceed demand.

Simon emphasized on the need to ensure seed certification in order to improve the quality of seeds distributed to farmers and/or organizations. Strengthening partnerships with FRIM, LRC and other organizations will enhance efficiency in the system. He added that the CATS bank model is promising, but it can be improved by introducing new agroforestry varieties known to the farmers.


The total number of fruit tree seedlings distributed from centralized nurseries during AFSP I (2007–2010) was estimated at 249,992. Distribution of seedlings was done in partnership with research stations such as ICRAF, Bunda college and LRC. High transport costs and damage of planting materials during transportation were cited as the main challenges faced during distribution.

Between 2009 and 2010 centralized and community nurseries adopted a new approach that involved grafting of fruit trees. Centralized nurseries trained communities on grafting and budding fruit trees based on the set quality standards. Only vegetative propagated fruit trees were raised in the centralized nurseries with a few grafted trees being raised in the community nurseries. Legislative certification was preferred to voluntary certification and was conducted by the inspectors introduced for this purpose. The already existing Fruit Tree Nursery Association met the costs of the certification exercise.

**Commercializing forest tree seeds in Ethiopia by private seed dealers**

*Tumcha Balguda - Eden Field Agri-seed Enterprise*

Tumcha Balguda begun by giving a brief overview of the seed private sector in Ethiopia– its importance, major activities and challenges encountered. Further he gave a detailed description of Eden Field Agri-seed Enterprise, the seed company in which he was working. Eden Field Agri-Seed Enterprise is a privately owned forest and forage development organization established in 2008. It is engaged in production and supplying of forest tree and forage/ fodder seeds.

The enterprise collects processes and supplies seeds from forest trees (indigenous and exotic trees as well as shrub / bush tree species) and forages (grasses, herbaceous-legumes, fodder tree species and
others) that are suitable for different agro-ecological zones of the country. Seeds are collected only from state forests because these are trusted to be of high quality. The enterprise works in conjunction with the government, NGOs and women/youth associations which form the major clientele of the enterprise.

**Challenges faced by the enterprise**

- High demand for forest seeds which the enterprise is unable to meet due to limited capacity
- Poor linkage among stakeholders and scarcity of innovation system on seed production
- Lack of adequate knowledge on forest seed production techniques
- Lack of modern seed processing and storage facilities
- Lack of financial support mainly from bilateral and multilateral donors for the private sector involved in seed production
- Unlicensed forest seed dealers supplying uncertified and low quality seeds in the country at low prices
- Quality mother trees for seed production are far from the center, thus high cost of forest seed thereby becoming unaffordable for farmers
- Inadequate supply of quality forest seeds for various species, particularly the indigenous species
- Lack of accountable forest seed business regulatory body to guide, manage and control seed development sector
- Price fluctuation of forest seeds

Despite the challenges above, Tumcha noted that high demand for tree seeds and existing/upcoming environmental conservation initiatives are some of the opportunities that will enhance performance of the enterprise. He acknowledged the current governmental and non-governmental organizations involved in supply of tree germplasm and highlighted the need to collaborate with the private sector in order to meet the increasing demand for tree seeds. Appropriate policies and quality control measures are imperative in ensuring that quality tree seeds are produced and supplied to the communities. In his concluding remarks, Tumcha emphasized on importance of tree seed production activities in environmental rehabilitation initiatives in which high seed quality is essential for their sustainability.

**Group discussions**

Participants formed different groups aimed at conducting a SWOT analysis of the Tree seed and seedling system in Ethiopia.

**Guiding questions for the group discussion**
• Describe what you see as the best scenario for tree seed and seedling system in Ethiopia you are working and similar areas in the country
• Conduct a SWOT analysis to tabulate factors that would help us move from where we are to the vision you have described

Feedback from the groups
Below is a summary of the feedback obtained from the groups

STRENGTHS

➢ Mass mobilization in planting trees
➢ Establishment of tree seed center in four provinces (Oromia, Amhara, SNNP and Tigray)
➢ Supply of Seed and seedling by the government, private and NGO’s to the communities
➢ The existence of forest policy and strategies towards seed and seedling supply
➢ Establishment of the new Ministry of Environment and Natural resources
➢ Research on forest seed and seedlings
➢ Awareness of the farmers on seed collection and seed supply

WEAKNESSES

➢ Unavailability of adequate seeds
➢ Inadequate budget for seed and seedling production
➢ Low quality of seeds supplied by most private and government suppliers
➢ Poor selection of mother trees
➢ Poor seed storage system and transportation
➢ Poor institutional arrangement for monitoring and evaluation of private seed suppliers
➢ Lack of forest seed and seedling regulations/ guidelines
➢ Inappropriate site and species matching
➢ Lack of free gazing regulations
➢ Lack of land use planning system
➢ Lack of technical knowledge
➢ Poor forest extension system

OPPORTUNITIES

✓ Expansion of small enterprises dealing with seedling production
✓ High demand for diverse tree species
✓ Availability of potential investors/ donors in forest trees
✓ Climate change
✓ Need to restore degraded areas
✓ Land certification
✓ Expansion of irrigation schemes
✓ Expansion of agro forestry practices
✓ Green warm initiatives
THREATS

☑ Population pressure
☑ Expansion of agricultural practices
☑ Provision of investment on forest land uses
☑ Forest degradation
☑ Tree attack by pests and diseases
☑ Free grazing
☑ Forest fires
Questions and comments raised by participants and responses

1. Seed and Seedling systems overview and link to extension systems (Jonathan Muriuki)

Questions:

Seeds and seedlings are mostly provided by government in Ethiopia; and species diversity is decided by the government (regional example: 60% indigenous and 40% exotic) how do we match the preferences of the government with the preferences of the farmer?

2. Studies on seed and seedling systems in TFSP Ethiopia (baselines, KII and nursery surveys) (Jonathan Muriuki and Kassim Dedefo)

Questions (to Kassim):

- What type of nurseries were surveyed (were they exclusively tree nurseries?)
- Mother tree selection was based on 2 main criteria – the tree being the only one available with seeds/ fruit and the tree ‘appearing good or mature’ could you elaborate on what the difference was between these two criteria?
- Has there been an attempt to evaluate the profitability of the seedling sales in the nursery? (evaluating differences in cost of seedlings)
- How does the species diversity differ in private nurseries compared to government and NGO nurseries?
- Species diversity and seed source (clarify relationship)

3. Agroforestry tree domestication: RRCs and other networks for agroforestry germplasm supply in Cameroon (Bertin Takoutsing)

Questions:

- (Ermias) Does the RRCs only focus on tree establishment nurseries or have they been used to provide other agricultural resources?
- (Abayneh) What was the average size of the RRCs? What are the incentives and benefits received by those that attend the RRC?
- Why did the number of women farmers involved drop between 2008 and 2009?
- What species were used/ recommended for the intercropping agroforestry system (upper mid and low story forest garden system)?

4. National strategy for agroforestry seed and seedling supply in Malawi (Evelyn Kiptot)

Questions:

- Where farmers stratified to select those that were food secure? How did the supply centres generate demand for diverse species?
5. **Private sector presentation (Tumcha Balguda Representing Eden field agri-seed enterprise)**

Questions:

- (Shifa) why are Grevillea seeds not supplied in sufficient quantity and what is the purpose of chemical treatment of seeds?
- (Alemyehu) is there a gap between the demand and supply? Why is there market uncertainty if the demand is high?

Answers/Responses:

- Demand for Grevillea is very sensitive because they are prepared on contractual processes/orders as they cannot be stored for long considering their sensitivity for germination

- Tree seedlings are treated twice from collection point to the storage point to control for any pest and disease attack. The first stage of treatment is the cleaning of the seedlings manually then the next stage is chemical treatment through fumigation prior to storage

- Some government agencies give tasks for seed collection but in the end do not buy them; sometimes uncertainty comes because of perishability of seed; and sometimes customers lack the information that the species are available from the private sector

- Seed treatment is fumigation of seeds upon arrival and after processing before storage

- Tree seedlings vary in nature and that explains their processes/sensitivity in germination and growth to maturity. Because of this the private sector seedlings supply system has a limited mandate to stocking all the tree seedlings that could be in demand. Market uncertainty is an issue in the supply system because for instance, some various government sector advice for certain tree species collection which end up overstaying after collection and treatment eventually going to waste because they cannot germinate anymore. That in itself affects the private sector supply system as they run a complete loss as they cannot possibly predict the market demand for various tree species they only rely on contractual requests to supply for the requested tree seedlings. The private sector seeds supply system cannot by itself control the issues on supply-demand-market uncertainty but require to work alongside other sectors to address the issues.
6. Forage development and NRM (Alan Robertson)

Questions:

- (Abayneh) why was forage species poorly promoted by NGOs and Government agencies/ livestock sector in general? There are concerns about invasiveness (e.g. *Prosopis juliflora*) or self-propagating fodder species-
- (Diriba) regarding *Leucaena* spp. – it has Psyllid (pest) problems so how can it be promoted?

Answers:

- He likes invasive species and thinks they are a remedy for degraded areas
- Comparing L. leucocephala with L. pallida the former is twice as productive as the latter and Psyllid is not a problem anymore
- He is not aware of why livestock related institutions did not promote fodder tree species – from his experience in Nepal they could not introduce thorny species
- Introducing *Prosopis cineraria* would have been a better choice of species compared to *P. juliflora* – but *P. juliflora* is good for pod production for fodder and gasification (biogas) as alternative income source

7. Group presentations

Research Questions and support needed (includes identification of possible interventions – by the project, by the government, by the private sector)

- (Martha) asked whether some of the lessons from the Cameroon example in the morning such as the use of labeling and the practice of selling seedlings only with traceable origins might be incorporated
- (Jonathan) vision ok but timing is difficult – they should not assign the role of capacity building for the donors
- (Abayneh) concentrating on certified seed is not realistic because it is a system which is still in development
- (Jonathan) There is confusion around ‘certified’ seed and quality controlled seed, as a goal for the next 3 years increasing the use of certified seed should NOT be a priority, certified seed is expensive for farmers and (as fodder tree development presentation mentioned) researchers may expend a lot of effort developing certified varieties which never reach the market/ farmer.
## Workshop programme

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<td>Registration</td>
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<td>0830 - 0845</td>
<td>Meeting objectives and introductions</td>
<td>Kiros Hadgu</td>
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<td>0845 - 0930</td>
<td>Seed and seedling systems overview and link to extension systems</td>
<td>Jonathan Muriuki</td>
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<td>0930 - 1000</td>
<td>Studies on seed and seedling systems in TFSP Ethiopia (baselines, KII and nursery surveys)</td>
<td>Jonathan Muriuki and Kassim Dedefo</td>
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<td>1000 - 1020</td>
<td>Plenary discussions on presentations</td>
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<td>1020 - 1050</td>
<td>Health break</td>
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<tr>
<td>1050 - 1110</td>
<td>Guest presentation from Cameroon – Agroforestry tree domestication: RRCs and other networks for agroforestry germplasm supply in Cameroon</td>
<td>Bertin Takoutssing</td>
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<tr>
<td>1110 - 1130</td>
<td>Guest presentation from Malawi –Towards a national strategy for agroforestry seed and seedling supply: what is Malawi doing</td>
<td>Simon Mngomba (presentation given by Evelyn Kiptot)</td>
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<tr>
<td>1130 - 1200</td>
<td>Presentation from the private sector – Is there scope for commercializing tree seed in Ethiopia</td>
<td>Tumcha Balguda</td>
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<tr>
<td>1200 - 1230</td>
<td>Forage development and NRM</td>
<td>Alan Robertson</td>
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<tr>
<td>1230 - 1300</td>
<td>Plenary discussions on presentations</td>
<td>Abayneh Derero</td>
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<tr>
<td>1300 - 1400</td>
<td>Lunch</td>
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<tr>
<td>1400 - 1600</td>
<td>Group work</td>
<td>Abayneh Derero and Jonathan Muriuki</td>
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<td></td>
<td>1. SWOT on seed and seedling systems (national and site) - species diversity, seed sources, private sector involvement, other policy related constraints</td>
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<td>2. Research questions and support needed (includes Identification of possible interventions – by the project, by the government, by the private sector)</td>
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<tr>
<td>1600 - 1620</td>
<td>Health break</td>
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<tr>
<td>1620 - 1700</td>
<td>Plenary prioritization of interventions – site specific and across sites</td>
<td>Abayneh Derero</td>
</tr>
<tr>
<td>1700 - 1730</td>
<td>Closing and departure</td>
<td>Abayneh Derero</td>
</tr>
</tbody>
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### List of Participants

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Organization/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr Abayneh Derero</td>
<td>Forestry Research Centre of EIAR (FRC/EIAR)</td>
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<tr>
<td>2</td>
<td>Dr Abeje Eshe</td>
<td>FRC/EIAR</td>
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<td>3</td>
<td>Dr Kiros Meles Hadgu</td>
<td>World Agroforestry Centre - ICRAF-Ethiopia</td>
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<tr>
<td>4</td>
<td>Dr Alemayehu Negassa</td>
<td>FRC/EIAR</td>
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<tr>
<td>5</td>
<td>Dr Alemu Gezahegn</td>
<td>Ethiopia Institute of Agriculture Research (EIAR)</td>
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<tr>
<td>6</td>
<td>Mr Assefa Tofu</td>
<td>World Vision Ethiopia</td>
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<tr>
<td>8</td>
<td>Mr Bertin Takoutsing</td>
<td>ICRAF - Cameroon</td>
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<tr>
<td>10</td>
<td>Mr Dereje Darghie</td>
<td>Jima Arjo Woreda Office of Agriculture</td>
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<tr>
<td>11</td>
<td>Mr Diriba Negussie</td>
<td>FRC/EIAR</td>
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<tr>
<td>12</td>
<td>Mr Ermias Alemu</td>
<td>ICRISAT</td>
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<tr>
<td>13</td>
<td>Dr Evelyn Kiptot</td>
<td>ICRAF- Kenya</td>
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<tr>
<td>14</td>
<td>Mr Feyissa Mideksso</td>
<td>Bora Woreda Office of Agriculture</td>
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<tr>
<td>15</td>
<td>Dr Frederic Baudron</td>
<td>CYMMYT</td>
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<tr>
<td>16</td>
<td>Dr Getachew Ayana</td>
<td>Melkassa Agriculture Research Centre (MARC/EIAR)</td>
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<tr>
<td>17</td>
<td>Mr Gezahegn H/Mariam</td>
<td>Gezahegn seed supplier</td>
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<tr>
<td>18</td>
<td>Mr Girma Eshete</td>
<td>FRC/EIAR</td>
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<tr>
<td>19</td>
<td>Dr Jonathan Muriuki</td>
<td>ICRAF- Kenya</td>
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<td>20</td>
<td>Alan Robertson</td>
<td>ILRI</td>
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<tr>
<td>21</td>
<td>Dr Kiros Meles</td>
<td>ICRAF-Ethiopia</td>
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<tr>
<td>23</td>
<td>Mr Melaku Tadesse</td>
<td>MoA</td>
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<tr>
<td>24</td>
<td>Mr Mezgebu Senbeto</td>
<td>Bako Agriculture Research Centre (BARC)</td>
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<td>25</td>
<td>Mr Misganu Dida</td>
<td>Gobu Sayo Woreda Office of Agriculture</td>
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<td>26</td>
<td>Mr Mulugeta Siyoum</td>
<td>MARC/EIAR</td>
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<td>27</td>
<td>Mr Negash Mamo</td>
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<td>28</td>
<td>Mr Shifa Yesuf</td>
<td>Bako Tibe Woreda Office of Agriculture</td>
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<td>29</td>
<td>Mr Shiferaw Tadesse</td>
<td>BARC</td>
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<td>30</td>
<td>Mr Shimelis Tadesse</td>
<td>FRC/EIAR</td>
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<tr>
<td>31</td>
<td>Mr Simon Sitotaw</td>
<td>Simon Sitotaw Plant Seed Supplier</td>
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<td>32</td>
<td>Mr Tahir Hedeto</td>
<td>Adami Tulu Gido Kombolcha Woreda Agric Office</td>
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<tr>
<td>33</td>
<td>Dr Tilahun Geleto</td>
<td>OARI</td>
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<td>34</td>
<td>Mr. Tumcha Balguda</td>
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<tr>
<td>35</td>
<td>Mr Worku Abdu</td>
<td>Lume Office of Agri.</td>
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<td>36</td>
<td>Dr Woldeyohanes Fantu</td>
<td>FRC/EIAR</td>
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<tr>
<td>37</td>
<td>Mr Yasin Hussein</td>
<td>Guto Gida Office of Agri., expert</td>
</tr>
<tr>
<td>38</td>
<td>Dr Yiqremachew Seyoum</td>
<td>Ministry of Environment and Forests</td>
</tr>
<tr>
<td>39</td>
<td>Mr Biruk Berhan</td>
<td>MARC/EIAR</td>
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<tr>
<td>40</td>
<td>Dr Yitbarek Semeane</td>
<td>Agriculture Transformation Agency (ATA)</td>
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